MODERN WAREHOUSING AND DISTRIBUTION CENTERS

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LESSON NO 1 – INDUSTRIAL REVOLUTION

In this first lesson, I will take you back to the industrial Revolution, the ways how our industry evaluated and the impact on our supply chain. first of all, when did it all start? when did it start mentioning logistics and that part some people say it will be in the ancient history but the first notification of logistics was actually done in 1811 by a guy called Dr. William Muller. and he wrote a book "The Elements of The Science of War" and in that book there was one chapter called "Logistics" and if you look back in some parts of the history, what was that timing? that timing was at the same time that Napoleon had his big World War. he wanted to concur the world. and actually, in making that global war he faced the disadvantages and advantages of logistics he went into Egypt, had some issues with supply. and actually he lost his war in Russia where the Russians cut off its complete supply and his troops starved to death. It was the same time that we started an industrial revolution. we cut water and steam power and were able to move goods all over the world by building Railways and automate production. The next stage is the second Industrial Revolution. The steam power was being replaced by electrical power. and it's also the start of what we called the mass production. In 1905, a newspaper "The Independent" had a first mention of supply chain that was not mentioned a few decades before. but over 100 years ago we already discussed something like a supply chain. It's also the timing that Mr. Frederick Taylor wrote his book Scientific Management and everybody who knows the movie from Charlie Chaplin while he's working in a factory can imagine what was written in that book. Automate repeat some points. but every writer needs somebody who is going to execute it. and there was one disturbing factor in between but also the crisis. what makes it possible that we need to go to mass production? that part was the First World War. of course we are in crisis. we are fighting. We are going into a war and needed equipment and other parts after that period, so in that time Frederick Taylor wrote his book the First World War was there and after that time, we need a company who will bring it into practice. The first one who brought it into practice. The mass production was Henry Ford with his models of car application in mass production. The guy who was famous about the statement you can cut every color as long as it is black was the first one who automated consumer production lines.

We always need a crisis to come further ahead. So after the Second World War we had Toyota. In 1948, as part of the Marshall Plan The combined the United Nations brought people to Japan. in Japan, a lot of scientists, quality professionals were building a new quality system. One of that part is the Toyota production system. In other lessons we will explain what that Toyota production system is, but it is the basis of lean management and still the part after decades. It's now in this fourth generation of management who are still improving that way of thinking just a couple after it In 1951, we had the first office computer don't compare that one with the nice laptop or mobile phone we are having now an office computer doing some simple calculations was in a big building. But it makes the start of what we call the industrial resolution number 3. We had computing power. So first we had water, steam, moved over to electric. and now we are able to calculate it's surprisingly, that in 1952, two persons Woodland & Silver are describing the concept of barcoding. The concept of barcoding was there just one year after we had a computer people were looking at it and predicted that it will come. Also, in that period, the foundations were being laid for international trade global supply chains because Malcolm Mclean, a transport entrepreneur in the United States discovered that it took a long time to load trucks and ships. and he built that standard container. It's still his concept. What is the basis of containers and containerisation right now? The same time the principles of postponement were written not by somebody who studied supply chain management. but of course somebody who was enabled in marketing. Because if we are postponed activities to the latest moment then we are able to build more efficient supply chains. For nowadays, it's still one of the major elements, what we are using in global supply chains. 1964 the concept of MRP was being built. It was IBM, an engineer of IBM who built that algorithm and what is still the basis of all ERP systems of calculating our material requirements. same moment only 79, just ten years before even the World Wide Web was there, we had a mention of electronic shopping. We should shop online. It's surprisingly that people in that time writing things which become effective after some time. So what we need to get, let's say those IDs being implemented is first of all we need a crisis a crisis like the worldwide but in 1973 also the oil crisis brought things forward in that same period we also need companies who are adapting the new technology. So the first MRP algorithm was being used in 1964 by Black and Decker. They built a computer model to plan their production. General Motors implemented its first two scanners. It took decades that we are customized with it. But those scanners were the first one for a new way of working. Also 1973 FedEx stacked the so called hub and spoke model. That hub and spoke model is the basis of all distribution. we have a main hub and from that hub, we are going to deliver. It's the basis for all the parcel companies. It's the basis for all airline companies.

1990, We have a new technological part. It's the World Wide Web. The Internet started when I saw that for the first time i didn't know what to do with it It was just a brochure but then on my computer but Amazon saw what the potential was of that element. They started in 1994, their first online book store that bookstore evaluated to one of the biggest service providers in the world. All elements of the computing power. And we go to the fourth industrial revolution. That's called the Internet of Things Internet of Things power. That's the part we are into now and what's that a big, let's say, scientific investigation that i saw that Internet of Things. No, It was again in 1999. IBM in a presentation on one slide there was stated that Internet of things. The key of the business we are doing now. In a later lesson, I will go into more detail what Internet of things is but it's changing the way we are doing things. Also in that part in that era we had of course, cradle to cradle. The first thinking of sustainability making circular supply chains. Not surprisingly, that we started managing risks in supply chain. It became of course actual after the banking crisis in 2009 all companies suddenly started to do risk management and risk in supply chains. and last but not least, we have seen the impact of 911 and it took some time that also supply chain should be secured all those elements are being brought together all those elements bringing into changes of the world. currently we are facing the covid-19 crisis that also impacts everything on the supply chain. Industrial revolution, we have of course the fourth which are there mechanization water power, steam power in the first one coming over to mass production assembly line based on electricity. The second Industrial revolution. The third one is going about computer and automation having those systems as core for planning and supply chain management. and currently in the fourth one, the cyber physical systems. In timing, It's about the same 1800 the first, 1900 the second, 2000 the third, and nowadays we are in the fourth Industrial Revolution. and the 5th and the 6th are on its way. Looking to current trends, What are those supply chains? What can we expect in the future? First of all, big data analytics, the cloud that will be a big change. We will connect more things and use the Internet of things. The perfect order to get there will be important but also more difficult to get. The new lean is elastic supply chains not rigid supply chains. We will have an increased focus on cost to serve not on cost to make products become services and everything should be regarded in that way.
